

**Commonwealth of Kentucky**  
**Division for Air Quality**  
***PERMIT STATEMENT OF BASIS***

DRAFT

Title V / Synthetic Minor, Construction / Operating

Permit: V-05-037 (R1)

R. R. Donnelley and Sons Company, Danville Plant

Danville, KY 40422

March 29, 2007

Elahe Houshmand, Reviewer

SOURCE ID: 21-021-00037

SOURCE A.I. #: 381

ACTIVITY ID: APE20070001

***Revision 1:***

On January 29, 2007, the Kentucky Division for Air Quality received an air permit application from R.R. Donnelley's Danville, Kentucky Plant for a revision to their Title V Permit # V-05-037.

The requested changes in the application are as follows:

1. Add a new heatset lithographic printing press KDM-892 (EP 15).
2. Remove presses KDM-881 [03 (03)] and KDM-887 [10 (31)].
3. Add a new regenerative thermal oxidizer (RTO #4). In addition, the recuperative thermal oxidizer #1 will remain in service until the new regenerative thermal oxidizer, RTO #4, is operational. Following start-up of RTO#4, recuperative thermal oxidizer #1 will be used only as an emergency back-up control.

**COMMENTS:**

The VOC emissions from press KDM-892 (EP 15) shall be limited to less than 36 tons per year, which will limit the VOC emissions to below the Prevention of Deterioration threshold of 40 tons per year. The facility shall demonstrate compliance with this limitation via records of materials use and VOC content, combined with the thermal oxidizer control system.

The VOC emissions limitation of 36 tons per year from press KDM-892 (EP 15) would reduce its HAP emissions to below the major source threshold limits. As a result, this unit shall not have any HAP emission limits.

VOC destruction efficiency of the new regenerative thermal oxidizer #4 shall be tested in accordance with the requirements of SECTION G.4 of the permit.

As part of this Title V permit revision process, the revised CAM (Compliance Assurance Monitoring) plan is attached to the Statement of Basis (Attachment A).

**Type of control and efficiency:**

Four (4) regenerative thermal oxidizers will control all 13 presses in a multiplex configuration. Following start-up of regenerative thermal oxidizer #4, recuperative thermal oxidizer #1 will be used only as an emergency back-up control. The efficiency of the VOC control system is 97% or that efficiency established during the most recent performance test, whichever is lower.

**Applicable Regulations:**

**401 KAR 50:012.** General Application, Section 1(2)

Synthetic minor limitations apply to presses 1, 2, 4-7, 9, 11, 12, 13, 14 and 15 to preclude the applicability of state regulation 51:017, Prevention of significant deterioration of air quality.

**40 CFR Part 64,** Compliance assurance monitoring (CAM), applies since for an emission point a control device is used to achieve compliance with an emission limitation and the pre-control device emissions are potentially greater than 100 tons/yr.

**EMISSION AND OPERATING CAPS DESCRIPTION:**

The VOC emissions from presses EP # 1, 2, 4-7 shall not exceed 250 tons during any consecutive twelve (12) month period.

The total VOC emissions from presses EP # 11 shall not exceed 36 tons during any consecutive twelve (12) month period.

The total VOC emissions from presses EP # 15 shall not exceed 36 tons during any consecutive twelve (12) month period.

The emissions of single HAP from EP #11 and 12 shall not exceed nine (9) tons during any consecutive twelve (12) month period. The emissions of combined HAPs from EP # 11 and 12 shall not exceed twenty-two and one-half (22.5) tons per year.

***RENEWAL PERMIT, V-05-037:*****SOURCE DESCRIPTION:**

This facility is in the magazine lithographic printing and binding industry. This source is major for volatile organic compounds (VOC). The source has fourteen (14) heatset lithographic presses to print magazines. All fourteen presses are connected with a collection plenum where the emissions are captured and controlled by four thermal oxidizers. Synthetic minor limitations apply to presses 1-7, 9, 10, 11, 12, 13 & 14 to preclude the applicability of state regulation 51:017, Prevention of significant deterioration of air quality.

**COMMENTS:**

On April 21, 2005, R.R. Donnelley submitted an application for a Title V operating renewal for their Danville, Kentucky facility. With the application, the facility also submitted a CAM (Compliance Assurance Monitoring) plan as part of their Title V permit renewal process. The CAM plan is attached to the Statement of Basis (Attachment A). There have been no changes in the plant operations since the latest permit revision, V-99-011 (Revision 3).

## **Type of control and efficiency**

Three (3) regenerative thermal oxidizers and one (1) recuperative thermal oxidizer are controlling all 14 presses in a multiplex configuration. The overall efficiency for the oxidizers is 97 % for the collection and destruction of VOC.

## **Emission factors and their source**

MSDS

Engineering calculations

## **Applicable Regulations**

**401 KAR 50:012.** General Application, Section 1(2)

Synthetic minor limitations apply to presses 1-7, 9, 10, 11, 12, 13 and 14 to preclude the applicability of state regulation 51:017, Prevention of significant deterioration of air quality.

**40 CFR Part 64,** Compliance assurance monitoring (CAM), applies since for an emission point a control device is used to achieve compliance with an emission limitation and the pre-control device emissions are potentially greater than 100 tons/yr.

## **EMISSION AND OPERATING CAPS DESCRIPTION:**

The VOC emissions from presses EP # 1-7 shall not exceed 250 tons during any consecutive twelve (12) month period.

The VOC emissions from press EP # 9 shall not exceed 40 tons during any consecutive twelve (12) month period.

The total VOC emissions from presses EP # 10 & EP # 11 shall not exceed 36 tons during any consecutive twelve (12) month period.

The VOC emissions from press EP # 12 shall not exceed 36 tons during any consecutive twelve (12) month period.

The total VOC emissions from presses EP # 13 & EP # 14 shall not exceed 36 tons during any consecutive twelve (12) month period.

The emissions of single HAP from EP # 10, 11 and 12 shall not exceed nine (9) tons during any consecutive twelve (12) month period. The emissions of combined HAPs from EP # 10, 11 and 12 shall not exceed twenty-two and one-half (22.5) tons per year.

The emissions of single HAP from EP # 13 and 14 shall not exceed nine (9) tons during any consecutive twelve (12) month period. The emissions of combined HAPs from EP # 13 and 14 shall not exceed twenty-two and one-half (22.5) tons per year.

## **PERIODIC MONITORING**

Monitoring devices will continuously indicate and record the combustion chamber temperature of the thermal oxidizers. The company will conduct performance test(s) on the thermal oxidizer(s), which results in determining the overall efficiency of the oxidizers. In addition, an average temperature of each of thermal oxidizer will be established during performance test in order to verify compliance with the emission limitations given in the permit.

## **CREDIBLE EVIDENCE:**

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has only adopted the provisions of 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12 into its air quality regulations.

## **Attachment A**

# **COMPLIANCE ASSURANCE MONITORING (CAM) PLAN**

## **Pollution Control System for VOC Emissions From Lithographic Printing Presses**

**RR DONNELLEY  
Danville Manufacturing Plant  
Danville, Kentucky  
Title V Permit No. V-05-037(R1)  
AFS I. D. No. 21-021-00037**

### **APPLICABILITY**

In accordance with 40 CFR Part 64, Compliance Assurance Monitoring (CAM), the permittee has submitted a CAM Plan as part of Title V revision process. This CAM Plan addresses the VOC pollution control system (PCS). The PCS consists of two (2) MEGTEC Regenerative Thermal Oxidizers (RTOs), one (1) L&E Regenerative Thermal Oxidizer, and one (1) TANN Regenerative Thermal Oxidizer, Emission Points 24, 30, 37 and 39 respectively and the process units (press dryers) that vent to these devices. Solvent vapors from the press dryers are conveyed through common ducts and into the oxidizers. Each component of the oxidizer system maintains a minimum operational combustion chamber set-point temperature at which the minimum required destruction efficiency of 97% is demonstrated through approved performance (stack) testing. The PCS controls emissions from the thirteen (13) heat-set web offset lithographic printing presses (Emission Points 01 KDM-876, 02 KDM-880, 04 KDM-882, 05 KDM-883, 06 KDM-884, 07 KDM-877, 08 KDM-885, 09 KDM-886, 11 KDM-888, 12 KDM-889, 13 KDM-890, 14 KDM-891 and 15 KDM-892).

### **MONITORING APPROACH**

Monitoring of the PCS for compliance is accomplished by:

- A. Recording the operating temperature of the PCS components
- B. Periodic external inspection of collection devices and dampers for visible emissions
- C. Periodic emissions performance tests as required by the Title V permit.

The elements of the monitoring approach, including indicators to be monitored, indicator ranges, and performance criteria are presented in Table I.

#### *Rationale for Selection of Performance Indicators*

The operating temperatures of the oxidizers were selected because temperature is indicative of the thermal oxidizers' performance. By maintaining the operating temperature at or above a minimum value, the required level of destruction efficiency is maintained.

To further ensure PCS performance, components of the collection system are periodically

monitored to ensure that process solvents vapors are properly collected and channeled to the PCS. This is accomplished through periodic visual inspections of by-pass and collection damper operation as well as the PCS stacks.

Emissions performance tests on the oxidizers are conducted once every 5 years per the requirements of the Title V permit to demonstrate compliance with permit conditions (i.e., percent destruction efficiency).

*Rationale for Selection of Indicator Ranges*

The selected indicator range for the PCS is as follows: 1) RTOs and KATEC will be operated at a compliance temperature of the most recent performance test. The minimum required operating temperature for the oxidizers will be established based on Title V permit required source testing results. The oxidizer system includes a temperature controller that maintains the desired operating temperature by using an auxiliary burner. The temperature controller is set to maintain the compliance point temperature at or above the established indicator range. Should the temperature in the oxidizers fall more than 50 degrees Fahrenheit below the minimum required set point, the system will shut down (This includes affected process units).

TABLE 1. MONITORING APPROACH FOR RTO SYSTEM

<b>CAM Requirement</b>	<b>Indicator #1</b>	<b>Indicator #2</b>	<b>Indicator #3</b>
I. Indicator	Oxidizer operating temperature.	Visual Inspection of Collection System	Performance test
Measurement Approach	Record the operating temperature of the PCS components.	Visual inspection of collection dampers, by-pass valves and PCS stacks for visible emissions.	Conduct emissions test to demonstrate compliance with permitted destruction efficiency.
II. Indicator Range	An excursion is identified as any finding that the compliance point temperatures for the PCS components does not meet the minimum temperature required by the permit at all times when collecting process solvent vapors.	An excursion is identified as any finding that of visible emissions.	An excursion is identified as any finding that the oxidizer does not meet the permitted destruction efficiency.
Corrective Action	An excursion below the minimum temperature will automatically shut down the system and supported process units. This will initiate activities to correct the excursion. and may trigger a reporting	Each excursion triggers an assessment of the problem, corrective action and may trigger a reporting requirement.	Each excursion triggers an assessment of the problem, corrective action and may trigger a reporting requirement.

CAM Requirement	Indicator #1	Indicator #2	Indicator #3
	requirement.		
III. Performance Criteria			
A. Data Representativeness	The recording instrument shall be accurate to within 1.0% of temperature being measured, or $\pm 1^{\circ}\text{C}$ , whichever is greater.	Visual inspection logs will be maintained and audited to ensure that activity is conducted.	A test protocol shall be prepared and approved by the regulatory Agency prior to conducting the performance test.
B. Verification of Operational Status	Temperatures recorded manually, on chart paper or electronic media.	Records of the inspections conducted and observations made will be maintained in the EHS department	Not applicable.
C. QA/QC Practices and Criteria	Calibration check of the recording instrument will be conducted in accordance with OEM recommendations.	Not applicable.	EPA test methods approved in protocol.
D. Monitoring Frequency	Measured continuously	Weekly	Once every 5 years.
Data Collection Procedure	Automatically recorded on electronic media on a continuous basis. Data can be extracted from archives on demand.	Weekly visual inspection by a member of the EHS and/or facility maintenance department (or their designee)	Per approved test method.
Averaging Period	3 hours.	Not applicable.	Not applicable.
E. Record Keeping	Maintain records of temperature monitoring data and corrective actions taken in response to excursions for a period of 5 years.	Maintain records of the inspections and corrective actions taken in response to excursions in accordance with the compliance section of Donnelley's Preventative Maintenance (PM) program for a period of 5 years.	Maintain a copy of the test report for 5 years or until another test is conducted. Maintain records of corrective actions taken in response to excursions.
F. Reporting	Number, duration, cause of any excursion and the corrective	Number, duration, cause of any excursion and the corrective	Submit test protocol to Agency as required.

<b>CAM Requirement</b>	<b>Indicator #1</b>	<b>Indicator #2</b>	<b>Indicator #3</b>
	action taken.	action taken.	
Frequency	As requested by agency or in the event of excursions, semi-annually.	As requested by agency or in the event of excursions, semi-annually.	For each performance test conducted.

In addition to actions required for environmental performance, PM programs are in place that contain other items unrelated to environmental performance (e.g., operational and safety considerations). These activities will be conducted by maintenance personnel.